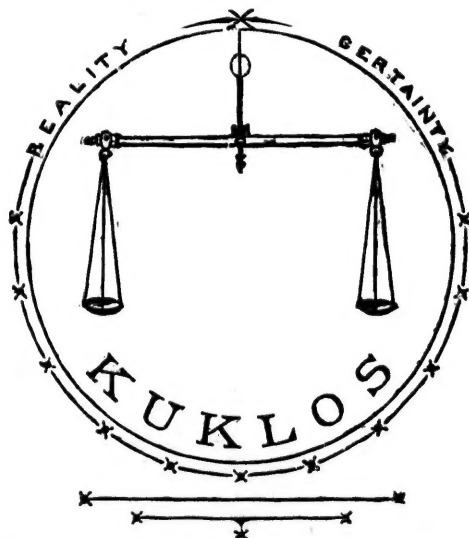




INDEX
AND
SPECIFICATION OF CONTENTS.

TO THE SERIES ENTITLED
CENTRIFUGAL FORCE
AND
GRAVITATION.

BY
JOHN HARRIS.



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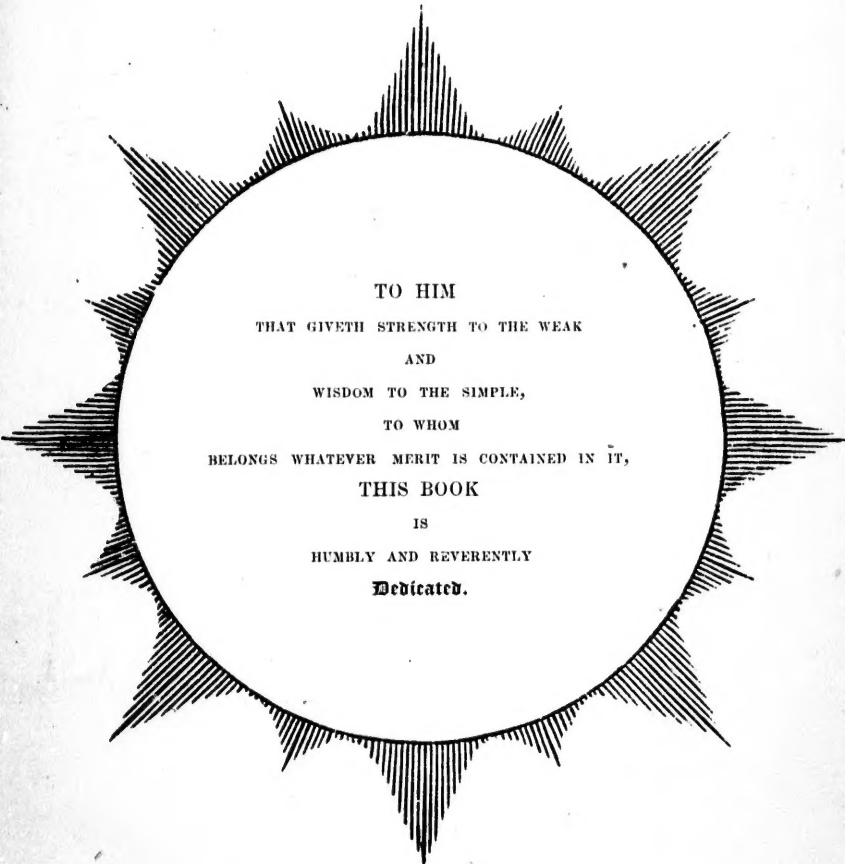


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TO HIM
THAT GIVETH STRENGTH TO THE WEAK
AND
WISDOM TO THE SIMPLE,
TO WHOM
BELONGS WHATEVER MERIT IS CONTAINED IN IT,
THIS BOOK
IS
HUMBLY AND REVERENTLY
Dedicated.

CENTRIFUGAL FORCE AND GRAVITATION.

SOME OBSERVATIONS ON THE PURPOSE OF THE SERIES; SPECIFICATION OF CONTENTS, AND INDEX.

In regard to the title, the contents and the purpose, we are now in a position to give a more full and specific explanation than could be given in the introductory remarks at the commencement of this Series.

The general character of the work is critical and judicial, and one of the forms in which its purpose may be expressed is to discriminate and distinguish between Science and UNSOUND Science.

The Preface (to Part First) asserts and undertakes to demonstrate that certain unsound and erroneous theories contaminate a large and important part of what is now supposed to be the orthodox teaching of Natural Science.

Now, Unsound Science, although opposed to (Sound) Science, has this in common therewith, that it is systemized and organized. In Unsound Science, one false statement is based upon some more primary false statement; and the whole scheme, in respect to its unsoundness, is founded upon unreality, mystery and untruth, just as Science is necessarily based upon certainty and truth.

We wish it to be particularly observed that we do not dispute or call in question the facts of observation

or experience, whether that experience be the result of physical or ideal analysis; nor do we accuse or in the least degree suspect the observers and experimenters, acknowledged by science as such, of misrepresentation or intentional deception; on the contrary, we have trustfulness and confidence in their observations and in the results of their experimental investigations as those of men honourable and trustful as well as of natural ability (in many instances of great ability) specially trained and devoted to such investigations. For instance, although we have challenged and are disputing astronomical theories and doctrines which were adopted and concurred in by William Herschel, we do not question the correctness of his astronomical observations nor doubt the truthfulness of the record which he gave to the public of those observations. In stating our reasons for concluding that the planets Uranus and Neptune do not belong to the solar-system, we have based the argument upon the careful observations of the satellites of the planet Uranus by that distinguished astronomer. (Part Third, page 15, *et seq.*)

The specific cases on which we challenge the present teaching, the grounds upon which we dispute that teaching, and the arguments by which we support our protests, are now before the reader.

It is true that these cases are amongst those which are looked upon as the most difficult, complex and abstruse of all the general subjects belonging to Natural Science; but our argument is... that the difficulty and abstruseness arises, in a great measure from the fallacy and mystery which have become involved in the teaching on those cases, and does not necessarily belong to

the subjects themselves; that, moreover, the decisive issue is, in each case, as to the foundation of what is taught, as to whether the fundamental basis is real, reasonable and true, or unreal, deceptive and false; and that, to determine the character of such fundamental basis, when brought separately and distinctly under consideration, does not require the formulæ of modern mathematics, nor any peculiar and arbitrary system of reasoning; neither is the decision necessarily confined to a few highly trained and highly educated minds; the essentially requisite qualification is that the mind, ordinarily educated and possessed of ordinary intelligence, shall be dispassionate, unprejudiced and reasonable.*

We will now briefly specify the most important of those questions on which we have found occasion to condemn the present teaching.

(1) *On a body revolving around a centre of gravitation.*

—Whereas it is now taught that the moving body revolves in an arc (circle) compounded of the tangential motion and the centrifugal motion.... We have shown that this teaching is erroneous, for, if it were true the velocity of the revolving body would continually increase... And we affirm, as the sound doctrine, that the revolving body is restrained by the gravitating influence from deviating out of the arc (circle) of revolution.

PART FIRST, SEC. 1.

* We are not to be understood as objecting, or entertaining any objection whatever, to the strictest mathematical investigation in any form that is sound and scientific; but we insist that a knowledge of what are termed higher mathematics, and of modern mathematical methods and processes, are unnecessary, and we therefore entirely object to those who may not possess such technical knowledge but are quite well qualified to come to a sound reasonable decision on the several questions, being excluded from their rightful share and influence in determining the general conclusion.

(2) *Of the moon's influence on the tides.*—Whereas it is now taught that the moon draws the earth away from the water (and the water away from the earth)... We affirm this to be impossible; for, if it were true, the earth and moon would soon come into collision... And we have shown that a reasonable and satisfactory explanation of the double tide may be found in the effect of the moon's influence in shifting the earth's centre of gravity towards the side opposite to her, causing that part of the earth's surface to attract the water more powerfully, thereby occasioning a greater depth on that side furthest from her; whilst the direct influence of lunar gravitation attracts the water to the side nearest to the moon and causes a greater depth on that side also.

PART FIRST, SEC. 12.

(3) *The pendulum as measuring variations in the intensity of gravitation at different parts of the earth's surface.*—It is now taught that the squares of the times of oscillation vary in the inverse proportion of the force... We have pointed out that such doctrine is not consistent with the law of accelerated motion under the influence of a continuously acting force such as gravitation; because by that law the time occupied by a body in moving (falling) through a certain space is inversely proportional to the force simply. Wherefore, if the force of gravity be augmented, the times, and not the squares of the times, of oscillation of the pendulum will be diminished in the same ratio.

PART FIRST, SEC. 14.

(4) *The inclined-axis of the earth, and the plane of the earth's orbital revolution constantly coincident with the equatorial plane of the sun.* . . . which is now taught as according with the observed facts, and as a part of astronomical science; we have shown to be an untenable theory. . . . unsupported by the facts. And we affirm and have demonstrated by the observed facts, the actual relation to be. . . . the perpendicular position of the earth's axis relatively to the axis of the sun, and the obliquity of the earth's orbit of revolution relatively to the equatorial plane of the sun; and which last we affirm to be the mean nodal plane of orbital revolution for each and every planet belonging to the solar-system.

PART SECOND.

(5) Whereas it is now taught that the planets Uranus and Neptune belong to the Solar system as planetary members thereof, we have shewn that certain of the observed phenomena pertaining to those two planets do not accord with such hypothesis; and we conclude, for the reasons set forth, that those two planets belong to a neighbouring stellar system, and therefore are not planetary subjects of our Sun.

PART THIRD.

(6) *The Theory of Cometary Orbits.*—Whereas it is now taught. . . that the cometary body approaches the sun (in obedience to gravitation) from an enormous distance, and that, after making part of a revolution around the sun, in comparatively close proximity thereto, notwithstanding the exceeding intensity of the attractive force to which it is then exposed, it suddenly departs in a right line without further obedience to the law of gravitation, until it has again attained an enormous dis-

tance from the sun, whence it returns . . . We have shown that this theory is quite inconsistent with the law of gravitation.

PART THIRD.

We have, moreover, for reasons set forth, objected generally and particularly to the eccentric orbit theory as not belonging to sound astronomical science; and we have proposed, and affirmed as a positive doctrine the theory of the compound expanding orbit, which perfectly accords with the law of gravitation, satisfactorily explains the facts of observation, and is supported by the phenomena pertaining to cometary bodies.

PART FOURTH.

NOTE.—We have also explained that the luminous train and light of the comet is caused by an accumulation of free (volumetric electricity on that side of the cometary body furthest from the sun; which accumulation results from the inductive action of the sun's electricity.

To show that this explanation is satisfactorily supported, we have brought together a number of observed facts belonging to electricity and electrical phenomena.

PART FIFTH.

(7) *The Corpuscular Emission Theory of Light.*—We have rejected this theory as untenable because it assumes that light, or the cause of light, consists in the reception of material particles emitted by the luminiferous body. Now if this be true, the recipient of the light . . . i. e., the illuminated body, would necessarily increase in weight according to the quantity of light received, and which quantity would be proportionate to the time of its exposure to the rays of light. Experience has established that no such effect takes place, and has, therefore, demonstrated the supposition to be unfounded.

PART FIFTH.

(8) *The Undulatory Theory of Light*.—We have shown this theory to be unsound and to be scientifically inadmissible. If the ether, with which the theory affirms that the universe is filled, be material (corporeal), it would necessarily accumulate about the centres of gravitation; and if it be not material (corporeal), no ground whatever is shown (even hypothetically) for the supposed undulations, for even the theory does not include an assumption that an immaterial (mode) of force can of itself undulate. The theory is therefore either impossible or altogether unsupported. Again, the theory affirms, according to some teachers, that a definite portion of ether expands and contracts alternately; according to other teachers that a number of particles of ether undulate or vibrate transversely, which is defined to mean that the particles move a certain distance with great rapidity in the one direction and then with equal rapidity in the reverse. In neither case is any cause of limitation in regard to the motion shown. No cause whatever is assigned to restrain the portion of expanding ether, or the particles of ether in motion, from intermingling with the surrounding ether, in which their motions take place. If the particles commence to move rapidly in the one direction, no cause is assigned why they should not continue to move in that direction.

The so-called theory is therefore quite inadmissible and not even sufficiently complete to entitle it to consideration as an undemonstrated theory. We may remark, as an independent objection, that a wholly suppositious hypothetical fluid which is neither material nor immaterial, and is not analogous to anything known; a fluid which has impossible properties attributed to it to suit the purposes of a theory, cannot be considered to belong to science.

(9) *The Aberration-of-Light Theory.*—This theory we have shown to be wholly suppositious, to be founded on a false analogy, and to be inconsistent with the known facts of astronomy.

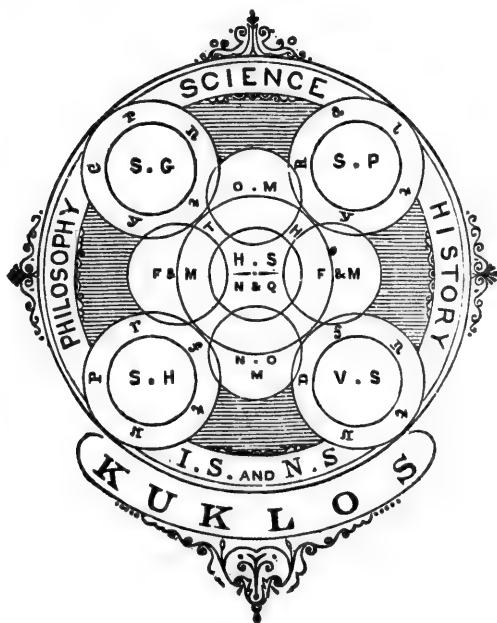
PART THIRD.

(10) *The Velocity-of-Light Theory.*—Whereas this theory is based upon the apparent variation in the time which elapses between the successive eclipses (of one) of Jupiter's satellites; and was proposed expressly with reference to that variation, and assigned as the cause thereof... we have shown that the perspective alterations in the visual angle arising from the increased and decreased distance of the earth from the planet, which Roemer and his successors have neglected to take into consideration, does in itself naturally and satisfactorily account for the observed apparent variation in the times of the eclipses; the theory is, therefore, wholly superfluous. We have, moreover, shown that the theory is impossible and untenable, because irreconcilable with the known facts pertaining to light, belonging to astronomical science.

PART FIFTH.

(11) We have stated as a generalization in physical science, that the natural world, as known to us, consists of force and matter.... That *matter*, as directly cognized by us through our senses, (*i. e.*, as naturally manifested to us by sensation) is compounded of force and matter.... That *force* is spiritual, and quite distinct from *matter*, upon which it acts, and by and through which its manifestations become known to us.... That *light*, *heat*, *gravitation*, *motion*, *electricity*, are various conditions of (free) *force*; and therefore all of them are spiritual..

..That the idea of *time* is a recognition by the mind of successive manifestations of force on matter. That *time* belongs, therefore, as, a necessity, to our cognition of the material (natural) world, but does not belong to force. And...that, therefore, the various conditions of force, such as light, heat, &c., have no velocity...*i. e.*, that the intercommunication between separate bodies of *free force* (influence) does not involve the idea of time.



INDEX, AND SPECIFICATION OF CONTENTS,
OF THE SERIES ENTITLED
CENTRIFUGAL FORCE & GRAVITATION.

PART FIRST.

The first general subject we have taken for particular examination is that which gives the title to the whole series, viz., Centrifugal Force and Gravitation.

This compound subject, which may be said to constitute the foundation of theoretical astronomy, occupies almost the whole of Part First, under the following divisions:—

	Page
(1) Centrifugal Force.....	10
(2) Terrestrial Gravitation at the Distance of the Moon.....	16
(3) Centripetal and Equilibrate Centrifugal Force of Revolution at the Centre of the Earth....	18
(4) The Rotation of the Earth or other Planet, as modifying the influence of the Gravitating mass from within, at the Surface of the Sphere	21
(5) The Effect of Gravitation in sustaining the Rotation of the Earth.....	26
(6) The Law of Gravitation and Centrifugal Force.	
(a) Linear Dynamical Equilibrium.....	30
(b) Angular Dynamical Equilibrium	33
(c) The Dynamical Conditions of Statical Equi- librium	38
(7) The Sun's Rotative mass and Gravitative influ- ence on the Surface of the Earth.....	40
(8) Planetary Systems	41

	Page
(9) The case of a Gravitating mass (a Planetary or Cometary Body) approaching or receding from the Sun; and the law of Equable Areas	44
(10) The Compounded Centripetal and Compounded Centrifugal Motion of the Planetary (or Cometary) Body in approaching and reced- ing from the Sun.....	55
(11) Ellipticity of the Planetary Orbit.....	57
(12) The influence of the Moon's Gravitation upon the Earth and the Theory of the Tides..	58
(13) The Form of the Earth and Terrestrial Gravi- tation.....	71
(14) The Pendulum as a Measure of Terrestrial Gravitation	75
(15) Terrestrial Gravitation compounded of the at- tractive force belonging to all and each of the parts of the Earth.....	78
(16) Gravitation and the Atomic Theory.....	83
(17) Habitability of the Moon.....	91

PART SECOND.

The Subject of the Second Part is entitled, "Theory of
Orbital Revolution. Demonstration of the Earth's Perpendicu-
lar Axis. And, Oblique Plane of Terrestrial Orbit."

	Page
(1) The Celestial Sphere and the relative position of the Solar System.....	9
(2) The Theory of the Earth's Perpendicular Axis.	14
The Compound Affirmative Proposition.....	16
The Oblique Orbital Revolution.....	18
(3) The Mechanical relation of the Planet's verti- cal motion to the gravitative force of the Sun	21
(4) The Ellipticity and Dynamical Elements of the Orbit.....	24

SPECIFICATION OF CONTENTS.

15

	Page
(5) The Theory of the Earth's Inclined-Axis.....	28
(6) The Two Theories contrasted.....	29
(m) Illustration of the Perpendicular-Axis Theory	32
(n) Illustration of Inclined-Axis Theory.....	33
(7) The Transits of Venus and <i>Mércure</i>	48
(8) Practical application of the Perpendicular- Axis Theory to the measurement of the Sun's distance	51
(9) Parallax of the Stars.....	54
(10) The general doctrine of the Compound Oblique Orbit.....	57
(a) The Transit of Venus illustrating the gen- eralization.....	58
(11) The Solar Spots and the Perpendicular-Axis Theory.....	59
(12) The Solar System and the physical arrange- ments of the Stellar Universe.....	66
(b) The precession of the Equinoxes.....	67
(c) Relation of the vertical motion to the com- pound oblique orbit.....	69
(d) Vibration of the Earth's axis.....	71
(e) The Astronomical Record.....	74

APPENDIX.

(13) Definitions belonging to the present doctrine of the Celestial Sphere, &c	79
(14) The Diurnal Rotation of the Earth and the Pole of the Ecliptic.....	82

PART THIRD.

The Third Part comprises in three chapters two distinct subjects, viz :—

CHAPTER I.—THE SOLAR SYSTEM; AND THE GENERAL ARRANGEMENT OF THE SIDEREAL UNIVERSE.

- (1) The present state of Astronomical Science..... 9
- (2) Stellar Systems having their axis of revolution perpendicular to that of the Solar System... 13
- (3) The planets Uranus and Neptune, and the question of a neighbouring Stellar system.. 15
- (4) Masses of aggregated matter and their relation to the laws of the material universe..... 23
- (5) The relative distances of the visible stars..... 27

CHAPTER II.—THE PRESENT MIXED DOCTRINE OF PARALLAX AND ABERRATION.

- (6) Theory of Parallax..... 30
- (7) Theory of Aberration..... 48
- (8) A direct method of obtaining parallax of the distant stars 68

CHAPTER III.—THE ABERRATION-OF-LIGHT THEORY EXAMINED.

- (9) The conditions and requisitions of the theory.. 70
- (10) Practical application of the theory..... 72
- (11) The nature of Light as assumed by the theory (Immaterial Matter)..... 75
- (12) Aberration a dynamical theory..... 77
 - Note a.* The dynamical theory not in harmony with the laws of motion.....
- (13) Distrust in the gift of sight required by the Aberration theory..... 80
 - Note b.* A further dynamical test of the theory 82
 - Note c.* The continuous radiation of light and heat into space...i.e., radiation to waste...required by the theory..... 83
- (14) Direct heliocentric methods of obtaining parallax of the distant stars 85

PART FOURTH.

The Fourth Part treats of Comets and examines the Theory of Eccentric Cometary Orbits.

	Page
Preface.....	5
Chap. 1.—THEORY OF COMETARY ORBITS.	
Introductory Observations..	11
(1) The Compound Sideral Orbit.....	12
(2) The Compound Solar and Planetary Orbit	16
(3) Terrestrial and Solar Comets..	20
(4) The Expanding Compound Orbit.....	20

Chap. II.—THE COMETARY PHENOMENA.

(1) Theoretical Consideration of the Phenomena...	23
(a) Physical condition of a Comet.....	
(2) Explanation of the Phenomena.....	27
(3) Natural Division of Comets into two classes....	28
(4) The Theory of Eccentric Orbits, and the Facts } of Astronomy.....	30
(5) Biela's Comet.....	32
(6) Notices from the Record, of various Comets....	36
(7) The Eccentric Orbit Theory.....	41
(a) Extravagant hypotheses of the theory.....	49
(8) The Comet's Luminous Train.....	51
(9) Concluding Remarks.....	53

APPENDIX.

(1) Notice of Halley's Comet.....	55
(2) The Comet of 1744.....	59

PART FIFTH.

Theory of the Nature of Light; The Wave Theory of Sound; The Nature of Force and Manifestations of Force in the Phenomena of Physical Science.

FIRST DIVISION.

THE NATURE OF LIGHT.		PAGE
(1)	The Corpuscular Emission Theory	9
	Objections to the Theory	10
(2)	The Undulatory Theory	14
	Objections to the Theory	17
	<i>Science and Theology</i>	19
	<i>Science and Metaphysics</i>	26
(3)	Velocity of Light Theory	31
	Objections to the Theory	42
	Examination of the Record	
	Reference to Experience by instances	49
	Light.	
	Summary of the Evidence. Conclusion by inductive reasoning as to the nature of light. }	55
(4)	Generalization on the Nature of Force	61
	Force and Matter	63
	Allied Forces of Physical Science	65
(6)	The relationship of Volumetric Electricity and Light..	66
	The Luminous Train of the Comet..... }	
	Electrical Induction in its application to this case..... }	79
	Evidence of the relationship from the general record	80

SECOND DIVISION.

THE MATERIAL RELATIONS OF FORCE.

(1)	The Wave Theory of Sound	93
	Objections to the theory.....	102
	Examples and Illustrations from the Record.....	115
	The Nature of Sound.....	123

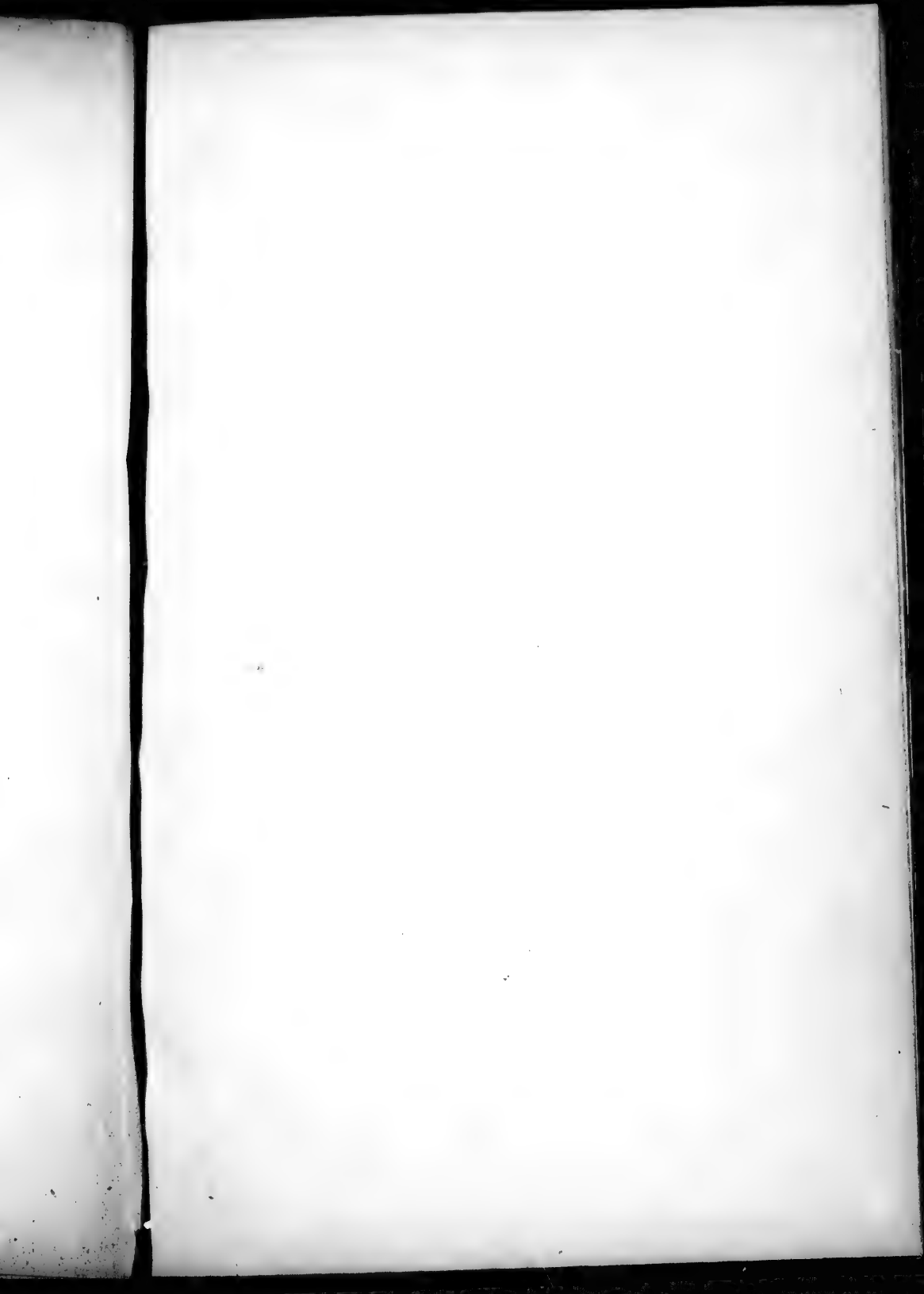
SPECIFICATION OF CONTENTS.

19

(2) Manifestations of the various forms (modes) of force on matter.	
A.—Magnetic and Thermal effects of Electricity ..	127
B.—Molecular (Voltaic) Electricity, and the Material Elements of compound matter	132
C.—Caloric-Force and Matter	139
D.—Magnetism and Magneto-Electric Force	142
E.—Magnetization of Light and Dia-Magnetism ..	148
(3) The Material World and the Universe	157
Conclusion	160

APPENDIX.

(1) Herschel's description of the Eclipses and Occultations of Jupiter's satellites	163
(2) Tyndall's Observations on the Ether of the Undulatory theory	167
(3) Appendix to the Allied Manifestations of Force on matter.	
a.—Magneto-Electric Force	173
b.—Volumetric Electricity	177
c.—Physical and Chemical Effects of Molecular Electricity	191
d.—Acoustic Force, Motion and Electricity	195
e.—Dynamical effects of Electro-Magnetism	198
(4) Subjective applications of Electric Force to mechanical purposes	208
The Coal supply. The Past and Future	214



THEOLOGY AND THE SCIENCE OF GOVERNMENT.

Being a Review of Macaulay's Teaching on that Division of Science.

NATURAL PHILOSOPHY AND DIVINE REVELATION.

THE SCIENCE OF IDEAL THEOLOGY

AS TAUGHT BY THE BIBLE.

POLITICAL ECONOMY.

CENTRIFUGAL FORCE AND GRAVITATION.

IN SIX PARTS.

PARTS.

- 1.—The Central Attractive Force and the Tangential Motion.
- 2.—The Doctrine of the Celestial Sphere, and the Theory of Orbital Revolution.
- 3.—The Solar System and the Theory of the Stellar Universe. The mixed doctrine of Parallax and Aberration.
- 4.—Comets and Cometary Orbits.
- 5.—Theories of Light. The true nature of Light. The Wave-Theory of Sound, and Manifestations of the various forms of Force.
- 6.—Index and Specification of Contents.

THE CIRCLE AND STRAIGHT LINE.

IN FOUR PARTS.

PARTS.

- 1.—The Geometrical Relationship Demonstrated.
- 2.—The Construction of the Circle. Quantitive Geometry.
- 3.—Elements of the Circle. Theory of Curvature.
- 4.—Analysis of Circle. Decimal Cyclometry.

BY

(KUKLOS.)

JOHN HARRIS.

JOHN LOVELL,
MONTREAL.

A. WILLIAMS & Co.,
BOSTON.

TRÜBNER & Co.,
LONDON

MENT. ION. PROSPECTUS OF A WORK ON GENERAL SCIENCE.

By (KUKLOS,) JOHN HARRIS.

IN the concluding part of the treatise called 'Centrifugal Force and Gravitation' we have specified the common purpose to which its several parts are related. That treatise, however, is itself intended to form part of a work having a more general purpose.

N.
Belonging to this more comprehensive work four treatises are now published, namely, 'Centrifugal Force and Gravitation;' 'The Circle and Straight Line;' 'Theology and the Science of Government;' 'Ideal Theology as taught by the Bible.'

The general purpose, which the complete work is intended to serve, is demonstration of the true relationship of Theology to Science.

evolution.
mixed doctrine of
This relationship may be stated in two ways, different, yet in harmony with each other accordingly as the terms 'Theology' and 'Science' are used in their universal and highest sense, or in the restricted sense of systemized knowledge belonging to humanity—i. e., of human Theology and human Science.

of Sound, and
Now in the universal or divine sense, it should be immediately evident that Science (i. e., all science) is included in and belongs to Theology. In the restricted sense, we believe it to be more correct to define the relationship by stating—that Theology belongs to Science as a part thereof; but (and to demonstrate this is the more general and comprehensive purpose of our work), it (the Science of Theology) is a part of Science absolutely essential to the well-being, to the progress, and, ultimately, to the existence of the whole. It may be properly considered as the all-important centre of coherence and stability, having a relationship to the other divisions of knowledge comparable with that of the Sun to the various members of the Solar system.

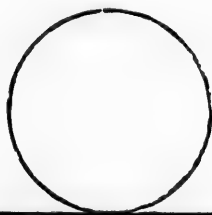
If this dependence of the other departments of Science upon Theology, for the healthy progress and well-being of the whole, be distinctly recognized and appreciated, the supreme importance of endeavoring to preserve that central Science from the admixture of unreasonable theories, and the contamination of unsound and false conclusions, will be manifest.

Having thus stated the general purpose of the Series, we refer to the accompanying tabulated summary for the particular contents of each treatise, and we will, for the present, leave what is now published to the examination of the public, in the expectation that, ere long, the opportunity to develop and carry further the work we have undertaken will be forthcoming.

Co.,
LONDON
MONTREAL, October, 1875.

THE CIRCLE
AND
STRAIGHT LINE

INDEX OF CONTENTS.

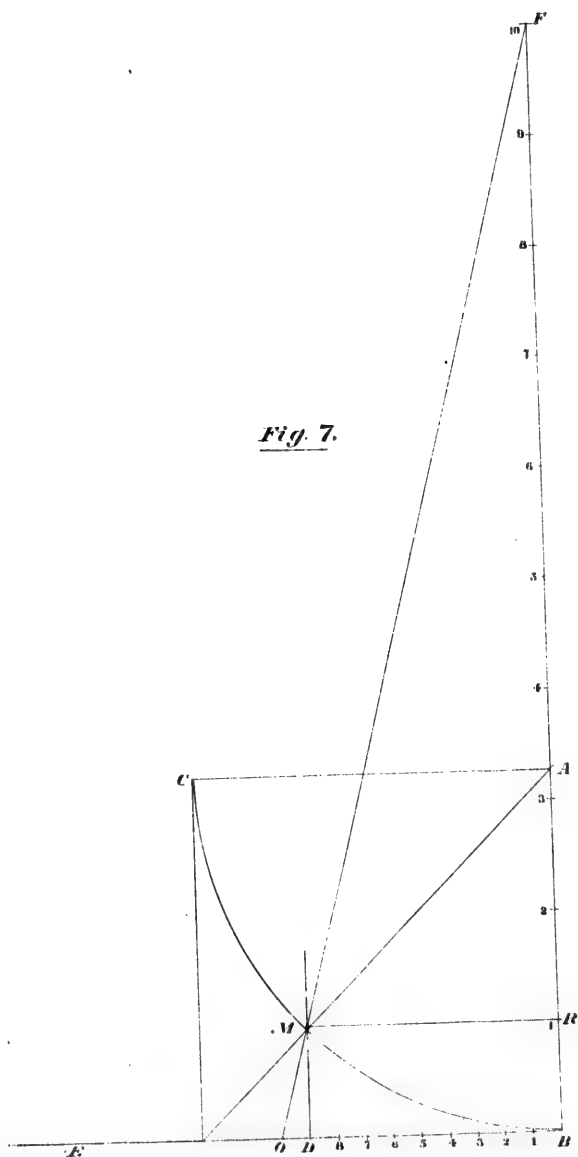


An investigation of the relationship
by magnitudinal and quantitative geometry.

BY
JOHN HARRIS.

Revised, Corrected and Reprinted,
October, 1875.

Fig. 7.



INDEX

TO

'THE CIRCLE AND STRAIGHT LINE.'

Part First.—Introduction. Definitions. The Construction. Prop. A. (*Fundamental Theorem*). Demonstration. Corollary. The Fundamental Theorem several times repeated. The Demonstration in various forms. Secondary Propositions. Prop. B. Prop. C. Prop. D. *Appendix.*—An Examination of certain Propositions in Euclid.

Part Second.—Structural perfection of the circle. Arithmetical Illustrations. Quantitive and Numerical demonstrations. Mathematics and the art of Computation. Legendre's Polygon Propositions. His supposed demonstration *objected to on fact*. The precise locality of the fallacy shown. The true meaning and significance of Legendre's result explained. Illustrations of the fallacy vitiating his supposed demonstrations. Geometry and Metaphysics. *Appendix.*—Dr. Simson's ingenious attempt to explain Euclid's dogma. His Explanation shown to be untenable. The Ultimate Sine. The repeating process of duplicating the bisected arc, explained and illustrated. The nature of the result. Shown to be in perfect agreement with that of Legendre. Advantages of the new method.

Part Third.—Theory of Curvature. The Ultimate Sine and Arc of increasing Curvature. The Tangential Line. Quantitive relations thereof. A Fundamental Theorem. Demonstration. Problem. Theorem. Quantitive Demonstration. The Ultimate Tangent. Truth and Certainty. Theology and Science. Conclusion. *APPENDIX.*—The Arcs of Curvature. The Complementary arc and arc of increasing curvature. Tables and Quantitive Illustrations.

Part Fourth—Supplement.—Analytical Examination of the Circle. The Primary Arcs. Division of the subject and Nomenclature. Cyclometrical Analysis. Cyclometrical Tables.

INDEX

THE CHINESE JAPANESE EDITION

The Chinese Japanese Edition of the *Journal of the Asiatic Society of Japan* is a valuable addition to the literature of the Far East. It contains a large number of articles on the history, geography, and customs of China and Japan, and is written in a clear and concise style. The editor, Mr. [Name], has done a very good job of selecting the best material and of presenting it in an attractive form. The book is well bound and is a pleasure to read.

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INDEX.

PART FIRST.

Introduction.

	PAGE
Euclid's System and Formal Method.....	7
The arrangement of the System	9
Application of the System to the Science of Form and Magnitude	11
The general application of Ideal Philosophy	12

The Circle and Straight Line.

Definitions	15
Axioms.....	17
The Construction	17
Prop. A. (Fundamental Theorem).....	20
Prop. B. Theorem ..	28
Prop. C. Problem.....	30
Prop. D. Problem.....	33

APPENDIX.

Euclid's Elements. Examination of two important propositions.....	35
Copies of the documents referred to in the Preface.....	41

PART SECOND.

The Elements of the Circle.

	PAGE
The Construction of the Circle.....	5
Illustration that <i>the difference between the chord and arc-length of the quadrant is an aliquot part of the chord, and of the arc-length</i>	6
Prop. in Quantitive Geometry.....	8
Quantitive and Numerical Illustrations	10
Arithmetical Demonstrations.....	11 to 24
Mathematics and the Art of Computation.....	24
Legendre's Polygon Propositions. Prop. xiii.	30
“ “ “ Prop. xiv.	32
His presumptive demonstration objected to	34
Summary of the objections.....	42
The actual meaning and significance of Legendre's result explained	43
Some Remarks on the distinction between Geometry and Metaphysics	44

APPENDIX.

Dr. Simson's supposed explanation of Euclid's dogma....	49
His explanation objected to	52
The Ultimate Sine.....	52
The Repeating Process of duplicating the bisected arc.	53
Comparison of the process with that of Legendre	54
Advantage of the new method for quantitative investi- } gation	56

PART THIRD.

The Theory of Curvature.

	PAGE
The Ultimate Sine and arc of increasing curvature.....	6
The Arc of Increasing Curvature	8
The Tangential Line B. D.....	8
Theorem (Fig. 24).....	10
Problem (Fig. 24)	11
Theorem (Fig. 25).....	12
The Ultimate Tangent	13
Truth and Certainty. Theology and Science.....	18
Conclusion	20

APPENDIX.

The Complementary arc, and arc of increasing curvature	23
--	----

PART FOURTH (SUPPLEMENT.)

The Elements of the Circle.

Analytical Examination by Fig. 23 R.

	PAGE
The Octuple Arc. The arc of 30 degrees; and } the line B. b.	1
By Fig. 24 R. The Octuple Arc, B. Q.....	5
By { Fig. 23 R. The Sextuple Arc, B. t.....	6
Fig. 24 R.	
Analytical Illustrations. Figs. 4, 5, 6, and Figs. 7, 8....	7
Examination of the Fig. 31.....	8
Do. " " Fig. 32.....	9
Do. " " Fig. 33.....	10
The arc of 15 degrees; and the line J. K. N.....	11
The half-sextuple arc of $18\frac{7}{8}$ degrees	13
The decimal circle of the duplicated versed sine	15
Analysis by decimal circles	16

APPENDIX.

Cyclometrical Table I.....	19
Do. " II.	22
Arc-lengths belonging to the first table.....	26

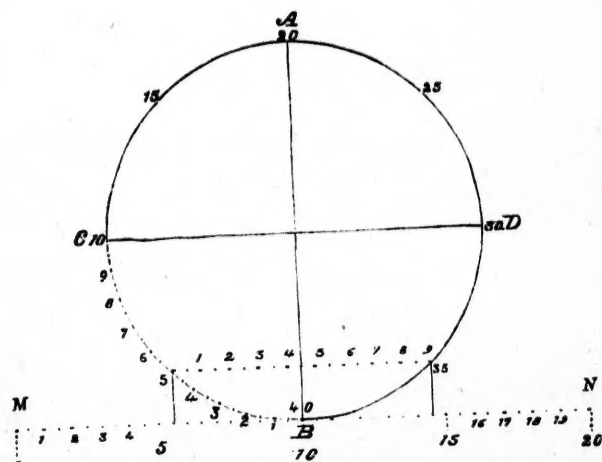
....	49
....	52
....	52
c.	53
....	54
}	56

PAGE	6
....	8
....	8
....	10
....	11
....	12
....	13
....	18
....	20

ure 23

PAGE	1
}	5
....	6
....	7
....	8
....	9
....	10
....	11
....	13
....	15
....	16

....	19
....	22
....	26



Twice the line M.N equals the Circle.